## PEER REVIEW HISTORY



## ARTICLE DETAILS

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| **TITLE (PROVISIONAL)** | Consumption of takeaway and fast food in a deprived inner London Borough: Are they associated with childhood obesity? |
| **AUTHORS** | Rachel Patterson, Alex Risby and Mei-Yen Chan |

## VERSION 1 - REVIEW

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| **REVIEWER** | Dr Lorna Fraser<br>Research Fellow<br>University of Leeds<br>UK |
| **REVIEW RETURNED** | 17/11/2011 |

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| **THE STUDY** | 1.The Title Fast Food and takeaway outlets in a deprived inner city London Borough: Are they associated with childhood obesity?<br>The study is looking at fast food consumption not the number or location of fast food outlets. The title needs corrected to reflect the study undertaken.<br>2. Use of BMI as an outcome. BMISDS has been calculated so BMI alone should not be used as an outcome in this study, we know children's BMI differs by age and sex so BMISDS only should be used.<br>3. Definition of Obesity. Recent literature has used the 85th and 95th percentiles for age and sex were used to define overweight and obesity rather than the 91st and 98th percentiles.<br>4. Why has no statistical modelling been undertaken? Multiple logistic and linear regression models for obese status and BMISDS should be undertaken. This must be undertaken before any conclusions can be drawn from this paper.<br>5. There are results given about physical activity but no mention of how this was measured in the methods section. Please make sure everything included in the results section has been described within the methods section.<br>6. The number of children recruited has been given but no description of how they were recruited, how many refusals they had and any selection bias that may have occured. |
| **RESULTS & CONCLUSIONS** | The methods of this paper need improved as described above before any comments regarding the results and conclusions can be made. I am happy to rereview this paper once the statistical modelling has been undertaken and reported. |

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| **REVIEWER** | Margo Barker<br>Lecturer in Nutritional Epidemiology<br>University of Sheffield |
| **REVIEW RETURNED** | 08/12/2011 |

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| **THE STUDY** | poor description of methods |
| **RESULTS & CONCLUSIONS** | Problem with self-report of fast food consumption especially with a possible interaction between reporting and body weight<br>See report for detail as to how discussion and conclusions could be altered |
| **GENERAL COMMENTS** | This study primarily examines the relationships between self-reported fast food consumption and physical activity and measured relative body weight in a relatively small sample (n=121) of adolescent schoolchildren. The study reports that fast food consumption was not associated with relative body weight.<br>Interpretation of the results is difficult due to the limitation of self-reporting of food consumption in this age grouping and the small sample size.<br>The study is inadequately described in parts and may benefit from further analysis:<br>Frequency of consumption categories in Figure 1 overlap. There are categories of one to seven times per week, alongside everyday and four to six times per week.<br>Fig 2 shows that those who eat foods every day are less convinced about taste as motivating factor in choice than other frequency of consumption groups. This effect could be discussed?<br>The amount spent on fast food could be used as an explanatory variable and may have advantages over direct frequency data, as spend may be less liable to misreporting compared with number.<br>Classification of physical activity is unclear. There seems to be overlapping categories of less than two hours per day and less than five hours per day. Also, these are rather crude categories and may not capture gradients in physical activity.<br>The physical activity questionnaire used is not described. Was this a validated questionnaire for this age group?<br>The discussion should state that that there was a trend for BMI to be inversely associated with fast food consumption, contrary to the hypothesis. Currently the discussion asserts that obesity is associated with under-reporting or slimming, but the converse has not been addressed.<br>P14 of the paper notes that there was a significant trend, which is confusing in the context of statistically significant effects.<br>Table 2 gives figures in parentheses for BMI age and gender percentiles, but does not explain these.<br>The discussion needs to acknowledge the limitations of self-reporting of fast food consumption and physical activity in this population.<br>A proportion of the sample did not provide anthropometric data. Did this proportion differ in any characteristic from the sample providing dietary information? |

**VERSION 1 – AUTHOR RESPONSE**

We would like to thank the reviewers for their helpful and valuable comments. Please find attached the revised manuscript with the suggestions incorporated and our response to the reviewers.

1. The Title Fast Food and takeaway outlets in a deprived inner city London Borough: Are they associated with childhood obesity? The study is looking at fast food consumption not the number or location of fast food outlets. The title needs corrected to reflect the study undertaken.

We agree with Reviewer 1 and have changed the title of the manuscript to reflect this. It is now changed to “Consumption of takeaway and fast food in a deprived inner city London Borough: Are they associated with childhood obesity?”

2. Use of BMI as an outcome. BMISDS has been calculated so BMI alone should not be used as an outcome in this study, we know children's BMI differs by age and sex so BMISDS only should be used.

As identified by Reviewer 1, the Body Mass Index (BMI) Standard Deviation Score (SDS) is recommended widely and is appropriate for diagnosing or defining obesity or overweight in children and adolescents. Therefore, we have reported it as a major outcome and based our discussions and conclusions on it. At the same time, there is evidence to suggest that using absolute BMI changes to monitor the change in BMI longitudinally in children in research settings may be helpful (Cole et al., 2005). Secondly, in adults, as there are clear differences between ethnic groups in the relationship between bodyweight, body fatness and fat distribution. Therefore, it may be helpful to include absolute BMI as an index for future reference in research, particularly to investigate ethnic specific differences amongst children.

3. Definition of Obesity. Recent literature has used the 85th and 95th percentiles for age and sex were used to define overweight and obesity rather than the 91st and 98th percentiles.

We have previously used the 91st and 98th percentiles to define overweight and obesity as these have been recommended for clinical practice in UK and these cut-offs are also available on the standard UK percentile charts (Reilly 2010). We agree with Reviewer 1 that the 85th and 95th percentiles for age and sex are more appropriate for public health surveillance of overweight and obesity in children and have incorporated the changes as reflected in both the Results and Discussion. These changes are tracked for easy references.

4. Why has no statistical modelling been undertaken? Multiple logistic and linear regression models for obese status and BMISDS should be undertaken. This must be undertaken before any conclusions can be drawn from this paper.

We have not carried out statistical modelling such as multiple logistic and linear regression modelling in this study because we did not find any statistical significant relationship between the BMI-percentiles specific for age and gender and the frequency of food purchased from the fast food and takeaway outlets. Hence, we feel that correcting for the various other variables in this non-significant relationship would not change the outcome of the results reported.

5. There are results given about physical activity but no mention of how this was measured in the methods section. Please make sure everything included in the results section has been described within the methods section.

Levels of physical activity were self-reported by the children. Subjects were asked to indicate how many hours of physical activity they do during (a) the weekend and (b) the weekdays on the questionnaire. We have added these details in the Methods under the Questionnaire.

6. The number of children recruited has been given but no description of how they were recruited, how many refusals they had and any selection bias that may have occurred.

Health coordinators in eleven state schools in Tower Hamlets were approached via email and/or in person to take part in this study. Letters explaining the aims, objectives and details of the study were also provided to each school. 2 schools agreed to participate in this study. A total of 193 (females n = 75, males n = 108 unknown gender n = 10) randomly chosen pupils aged between 11 – 14 years completed the study collectively from both schools. Any children who did not consent to being weighed or measured were not included in the study analysis so there was no selection bias.

7. Frequency of consumption categories in Figure 1 overlap. There are categories of one to seven times per week, alongside everyday and four to six times per week.

We thank Reviewer 2 for picking this up. This was an oversight in our checking process and has now been corrected in Figure 1.

8. Fig 2 shows that those who eat foods every day are less convinced about taste as motivating factor in choice than other frequency of consumption groups. This effect could be discussed?

This is a good suggestion and we have included and discussed this aspect in the manuscript on Page 12.

9. The amount spent on fast food could be used as an explanatory variable and may have advantages over direct frequency data, as spend may be less liable to misreporting compared with number.

We agree that this would also be interesting to examine the relationship between the amount spent on fast food as well as the proxy measure of using food vouchers and the weight status of the school children. We have had carried out this investigation and did not find any statistical relationship. Therefore, we have not included this in the discussion.

10. Classification of physical activity is unclear. There seems to be overlapping categories of less than two hours per day and less than five hours per day. Also, these are rather crude categories and may not capture gradients in physical activity.

Thanks for picking this up. We have now clarified the classification to reflect categories as used in the questionnaire. The categories were adapted from previous work done by Bauer and colleagues (2008).

11. The physical activity questionnaire used is not described. Was this a validated questionnaire for this age group?

Yes, the questions were adapted from Bauer and colleagues (2008). These questions were first pilot-tested in a smaller group of school children of the same age group before using it in the study.

12. The discussion should state that that there was a trend for BMI to be inversely associated with fast food consumption, contrary to the hypothesis. Currently the discussion asserts that obesity is associated with under-reporting or slimming, but the converse has not been addressed.

We agree that this is a possibility and if this were true, it will be difficult to interpret.

13. Table 2 gives figures in parentheses for BMI age and gender percentiles, but does not explain these.

We have clarified these figures with a legend under Table 2 to denote that these figures reflect the interquartile range.

14. The discussion needs to acknowledge the limitations of self-reporting of fast food consumption

and physical activity in this population.

We concur with Reviewer 2 on this and have added a sentence in the Discussion highlighting this limitation of the study.

15. A proportion of the sample did not provide anthropometric data. Did this proportion differ in any characteristic from the sample providing dietary information?

No, we have randomly selected the school children to be included in the study. As we did not include their data in the analysis, this did not confound our results.

References

Bauer, K.W., Larson, N.I., Nelson, M.C., Story, M. and Neumark-Sztainer, D. (2008) Socio-environmental, personal and behavioural predictors of fast food intake among adolescents, Public Health Nutrition, 12(10), 1767-1774

Cole, T.J., Faith, M.S., Pietrobelli, A. & Heo, M. (2005) What is the best measure of adiposity change in growing children? Eur J Clin Nutr 59, 419-425.

**VERSION 2 – REVIEW**

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| **REVIEWER** | Dr Lorna Fraser<br>Research Fellow<br>Paediatric Epidemiology Group<br>LIGHT<br>School of Medicine<br>University of Leeds<br>United Kingdom |
| **REVIEW RETURNED** | 15/01/2012 |

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| **THE STUDY** | 1.The Introduction is missing references for several statements e.g<br>a.Page 7 line 12-16.<br>b.Page 7 line 51-55 See Fraser et al International Journal of Obesity. 2011 Oct;35(10):1325-30 and Jennings et al American Journal of Preventive Medicine, 40, 405-410. 2011 for UK examples.<br>c. Page 8 last paragraph needs references<br><br>2. Be consistent with whether fast food is capitalised or not.<br><br>Methods<br>1. There may be selection bias as the children decided whether they wanted to participate and the children who declined may have been different to the children who consented e.g they may have been heavier or had different fast food consumption habits so this needs to be acknowledged in the limitations section.<br>2. Statistical modelling. The authors reasons for not undertaking statistical modelling are not valid. They state that as their is no significant relationship between fast food consumption and BMISDS that adjusting for other variables is not necessary. Yet they highlight |

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| | the differences in fast food consumption by gender! Deprivation and ethnicity are also important covaraites which shoudl be included in models. |
| **RESULTS & CONCLUSIONS** | Results<br>1. Only 121 out of 193 could have their BMISDS calculated, why? This needs to be highlighted throughout the results, discussion and conclusions. Were these children any different from the ones who could not have their BMISDS calculated. This may also account for the different results when BMISDS is used.<br>2. In relation to point 1. Table 1 needs to be corrected and include the number with data available for each variable alongside the percentages. This is vital for the reader to see this data.<br>3. In figure 4 p=0.00 should be reported as p< 0.001. |

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| **REVIEWER** | Margo Barker<br>Lecturer<br>University of Sheffield |
| **REVIEW RETURNED** | 09/02/2012 |

The reviewer completed the checklist but made no further comments.

**VERSION 2 – AUTHOR RESPONSE**

We would like to thank the reviewers for their comments. Please find attached the revised manuscript with the suggestions incorporated and our response to the reviewers.

'Fast food' is not a proper noun and should not be capitalised. nor should Takeaway. Please replace 'We ...' with more neutral wording; e.g. instead of 'We observed that', 'It was observed that'
We agree with the Editor and have made these replacements accordingly in the revised manuscript.

Under Methods, Participants, please include more information regarding the anonymisation (how were the numbers assigned and by whom).
We have now added the required details under Methods.

The Introduction is missing references for several statements e.g
a.Page 7 line 12-16.
b.Page 7 line 51-55 See Fraser et al International Journal of Obesity. 2011 Oct;35(10):1325-30 and Jennings et al American Journal of Preventive Medicine, 40, 405-410. 2011 for UK examples.
c. Page 8 last paragraph needs references

a) We have added these references to above statements.
b) We thank the reviewer for highlighting the recent reference by Fraser et al (2011) to us. At the time of the original manuscript subscription (Sep 2011), it was difficult to quote this reference. We have now removed the lines accordingly. This research has provided good insights and we have now added a comment about it and updated this reference in our Manuscript. Research conducted by Jennings et al (2011) examined the association between the availability of food outlets, children's weight status and the overall dietary pattern rather than the individual fast food consumption.
c) We have added the references to the statement.

There may be selection bias as the children decided whether they wanted to participate and the children who declined may have been different to the children who consented e.g they may have been heavier or had different fast food consumption habits so this needs to be acknowledged in the limitations section.

We agree with Reviewer 1 and have added these comments in the limitation section.

Statistical modelling. The authors reasons for not undertaking statistical modelling are not valid. They state that as their is no significant relationship between fast food consumption and BMISDS that adjusting for other variables is not necessary. Yet they highlight the differences in fast food consumption by gender! Deprivation and ethnicity are also important covaraites which shoudl be included in models.

We have confirmed our following rationale with our statistician and he agreed with us, particularly on a sample of this size. We did not find any statistical significant relationship between the BMI-percentiles specific for age and gender and the frequency of food purchased from the fast food and takeaway outlets. Correcting for all these various variables in this non-significant relationship would not change the outcome of the results reported.

In order to carry out sensible and logical interpretation of our data to answer our research question, we would have to separate the BMISDS by gender. It would be extremely difficult to make any logical and critical analysis of the data if we have not separated the weight status of the children by gender.

Only 121 out of 193 could have their BMISDS calculated, why? This needs to be highlighted throughout the results, discussion and conclusions. Were these children any different from the ones who could not have their BMISDS calculated. This may also account for the different results when BMISDS is used.

Any children who did not consent to being weighed or measured were not included in the study analysis so this did not affect the outcome of the results reported. We have incorporated these comments in the results, discussion and results.